DOCUMENT RESUME

ED 093 437 JC 740 250

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TITLE A Study of the Relationship That Exists Between the Rate of Student Course Completions and Three Course Scheduling Variables.
PUB DATE 9 Feb 74
NOTE 15p.

EDRS PRICE MF-$0.75 HC-$1.50 PLUS POSTAGE
DESCRIPTORS Classes (Groups of Students); *Dropout Rate; *Dropout Research; *Scheduling; *School Schedules; *Student Enrollment

ABSTRACT

This study sought to determine the relationship between selected variables used in scheduling classes and the ratio of student course completion. Hypotheses of the study were: (1) there is no difference in the proportion of student course completions for morning, midmorning, afternoon, and extension classes; (2) there is no relationship between the proportion of student course completions and the type of class; and (3) there is no relationship between the proportion of course completion and the size of the class. It was found that student course completion was not significantly affected by the type of class or by the time of day the class was scheduled. Student completion was not significantly affected by class size for classes with an enrollment greater than 20 students. Also, student course completion was adversely affected by class size for classes characterized as small (1-20 students). (Author/SW)

ED 093437

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A STUDY OF THE RELATIONSHIP THAT EXISTS BETWEEN THE RATE OF STUDENT COURSE COMPLETIONS AND THREE COURSE SCHEDULING VARIABLES

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February 9, 1974

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1. Purpose of This Study:

1.1 This research study is exploratory in nature and seeks to determine what relationships exist between selected variables used in scheduling of classes and the ratio of student course completion. Specifically, this study attempts to answer the following questions:

1.1.1 Is student completion of the course requirements affected by the time of day that a class is offered?

1.1.2 Is student completion of course requirements affected by the level of the class?

1.1.3 Is student completion of course requirements affected by the size of the class?

2. The Hypotheses:

2.1 This study will involve three hypotheses:

2.1.1 There is no difference in the proportion of student course completions between morning, midmorning, afternoon and extension classes.

2.1.2 There is no relationship between the proportion of student course completions and the type of the class.

2.1.3 There is no relationship between the proportion of student course completion and the size of the class.

3. Background and Significance of the Study:

3.1 Background:

3.1.1 In preparing for this study, a survey of research literature was made. The survey included materials from the Educational Resources Information Center Publications (ERIC), Current Index to Journals in Education (CIJE), Education Index, Encyclopedia

of Educational Research, Handbook of Research in Teaching, and the Encyclopedia of Education.

3.1.2 The topics surveyed were academic achievement, academic performance, college attendance and withdrawals. The survey covered literature prepared from January 1, 1968 through August 31, 1973.

3.1.3 Educational research has continually failed to find any strong correlation between class size and student learning or student success. Chrisp & Aven in their study on mathematics instruction in college found no significant correlation between class size and student learning, while Hoover, in his study, found that instructor's attitude was more important to student success than class size.

3.2 Significance of the Study:

3.2.1 This study may succeed in isolating a group of three course scheduling variables which relate to student course completion. Because the College is in a position to control the variables being tested, the staff at Southwestern College should be able to develop testable hypotheses and scheduling parameters for increasing student completions.

4. Definition of Terms:

4.1 Student: Anyone enrolled in a college course.

4.2 Course Level: Each course will be characterized as introductory, advanced, for subject majors, Adult Ungraded.

4.3 Adult Ungraded: A course offering for eighteen year olds and older for which no college credit is given.

4.4 Morning: A three hour block from 8:00 a.m. to 11:00 a.m.

4.5 Midmorning: A two hour block from 11:00 a.m. to 1:00 p.m.

4.6 Afternoon: A three hour block from 1:00 p.m. to 4:00 p.m.

4.7 Extension: Classes starting at 6:30 p.m. or classes scheduled on Saturday.

4.8 Completion: Satisfactory conclusion of course requirements with a grade of A, B, C, D, or Cr.

4.9 Census Date Enrollment: Active class enrollment at the end of the fourth week of the Semester.

5. Limitations of the Study:

5.1 The 720 courses offered during the Spring semester 1973, were used as the population for this study. Because the class offerings were prearranged and the researcher had no hand in establishing courses offered, class sizes, or the time of day of class offerings, this study may not be based upon a representative sample.

5.2 Because the study uses a questionnaire for collecting data, opinions expressed on the questionnaire may be distorted. Distortions could be due to bias in the survey questions, as well as distorted perceptions or ego defenses on the part of the participant completing the survey.

5.3 Survey recovery procedures could further limit the reliability of the results of this study. Questionnaires were distributed through the school mail boxes to those instructors still employed by Southwestern College. Questionnaires were mailed to the last known address of those instructors who

taught at Southwestern College Spring semester 1973 and are not currently employed by the District. The survey recovery rate of the population of classes was entirely dependent upon instructor cooperation in completing and returning the questionnaire.

5.4 The discriminations made by the survey may be too gross. Morning is defined as a three hour block rather than a finer breakdown into 8:00 a.m. classes as one choice, 9:00 a.m. classes as a second choice, etc.

5.5 The reliability of instructor choices may be questionable due to the time lapse between instructor involvement in the course and receipt of the survey questionnaire. The instructor may have forgotten such information as the time the class was offered or class size. Rather than taking the time to check out his records, the instructor may guess at the information.

5.6 No attempt has been made to measure teacher attitudes toward their subject matter, students, or teaching. No attempt has been made to correlate instructor personality with student completion. No attempt has been made to measure any variables other than those specified in the hypotheses.

5.7 No attempt has been made to interrelate and collectively interpret the affects of the combined variables on student completion ratios. Each hypothesis has been treated for purposes of this study as being independent from each of the other hypotheses.

5.8 The results of this study will have application only to

Southwestern College and does not generalize or propose that these results are applicable to other community college environments.

6. Basic Assumptions:

6.1 In preparing for this study, the researcher assumed the following:

6.1.1 Each hypothesis is independent from and has no affect upon another hypothesis of this study.

6.1.2 The Southwestern student body involves a normal distribution of intelligence, modivation, and maturity.

6.1.3 External pressures and demands for the student's time and interests, as they relate to course completions, will be considered a constant factor for all students.

6.1.4 For each course, variables introduced by the instructor, such as attitude, background, personality, and modivation are beyond the scope of this research, they will be collectively, considered as equal in their effect on student completions.

7. Procedures for Collection of Data:

7.1 A questionnaire (Appendix A) was prepared for each of the 720 courses offered during Spring semester 1973. Each of the questionnaires were coded with the corresponding course section number as a safeguard against duplication of sections.

7.2 On Monday, November 5, 1973, the questionnaire was placed in the faculty mail boxes of those faculty who are currently

employed, and mailed to the last known address of those not currently employed. Along with the survey questionnaire, a letter from the Vice-president was included. The letter asks for faculty cooperation in completing the questionnaires and asks for their return no later than November 17, 1973.

7.3 On Monday, November 19, after an accounting of the returned questionnaires had been completed, a follow-up letter and duplicate questionnaire was distributed to those faculty deliquent in returning their questionnaires. The follow-up letter asked for the return of the duplicate questionnaire no later than December 1, 1973.

7.4 When required, a second follow-up was instituted on December 1, 1973. A final cut off date of December 11, 1973, was established. This study was based upon those questionnaires which were received by that date.

7.5 Final grade reports which report student completion by letter grade were obtained from the Data Processing staff. Also, an administrative report which lists class enrollment at the census date was acquired. Student completion was determined from summarizing the final grade report for each section.

7.6 The completion ratio was calculated as follows:

$$\frac{\text{Number of A's + B's + C's + D's + Cr's}}{\text{Census Date Enrollment}}$$

8. Procedures for Treating Data:

8.1 A program was written which compared the completion ratio for each of the choices offered by the questionnaire with the average completion ratio for all day classes. As a

result, it was possible to compare the completion ratio for morning, midmorning, and afternoon classes (see Question 1 of the questionnaire in Appendix A) with the average ratio for all classes.

8.2 To determine if the difference between ratios was significant a two-tailed Z-test was used. Briefly, the Z-test takes into consideration that fact that our two completion ratios are based on different size samples. For example, our completion ratio for all classes will be based on, say, 250 classes which were identified as classes being offered at 8 AM, 9 AM, or 10 AM. For each choice offered by the questionnaire the computer will "read in" each choice made by the instructor and then "read in" the number of students enrolled on census date and the number of students who will have successfully completed that class.

8.3 Z-test results which achieved a 95 percent confidence level were considered significant. Z-test results which achieve a 99 percent confidence level were considered highly significant.

8.4 For each of the hypotheses a table was prepared summarizing the results of survey questions relating to that hypotheses. Each table has depicted the choice, the number of responses, the completion ratio, the completion ratio of all classes, the difference between completion ratios and the Z value.

8.5 Following the table is a narrative explaining the meaning of the results, whether the hypotheses were valid, and presenting any conclusions that can be drawn from the findings of the study.

9. Research Results:

9.1 The hypothesis, "There is no difference in the proportion of student course completions between morning, midmorning, afternoon and extension classes." was tested using the data resulting from the first survey question.

9.1.1 A. What time was the class offered:
1. 8, 9, 10 (morning)
2. 11, AM or 12 PM (midmorning)
3. 1 PM, 2 PM, 3 PM, 4 PM (afternoon)
4. 6:30 PM or Saturday (Extension)

Table A graphically presents the obtained results.

TABLE A

Choice	Number of Responses	Completion Ratio	Completion Ratio-Day Classes	Difference Between Completion Ratios	Z value**
A-1	269	70.20	70.10	+ .10	.03
A-2	131	70.82	70.10	+ .72	.16
A-3	161	70.21	70.10	+ .11	.02
A-4	21	62.50	70.10	-7.6	.71
A-0*	78	64.89	70.10	-5.21	not computed

*A-0 = There were 78 questionnaires in which question A was not answered.

**Significance at the 95% confidence level requires a Z value of 1.96 or larger.

9.1.2 Significance of the Data: The results of the first survey question indicates that student completion was not affected by the time of day that a class is offered.

9.2 The hypothesis, "There is no relationship between the proportion of student course completions and the type of the class." was tested using the data resulting from second survey question.

9.2.1 B. This class could be characterized as:
1. Introductory
2. Advanced
3. For subject majors
4. Class was (or should be) Adult Ungraded

Table B summarizes the results.

TABLE B

Choice	Number of Responses	Completion Ratio	Completion Ratio-Day Classes	Difference Between Completion Ratios	Z value**
B-1	356	69.70	70.10	- .4	.14
B-2	110	69.68	70.10	- .42	.09
B-3	101	73.08	70.10	+2.98	.63
B-4	16	67.88	70.10	+2.22	.19
B-0*	77	65.71	70.10	-4.39	not computed

*B-0 = There were 77 questionnaires in which question E was not answered.

**Significance at the 95% confidence level requires a Z value of 1.96 or larger.

9.2.2 Significance of the Data: The results of the second survey question indicates that student completion was not affected by the type of the class offered.

9.3 The hypothesis, "There is no relationship between the proportion of student course completion and the size of the class." was tested using the data resulting from the third survey question.

9.3.1 C. This class had approximately:
1. 0-20 students
2. 21-30 students
3. 30-40 students
4. 40+ students

The results are presented in Table C.

TABLE C

Choice	Number of Responses	Completion Ratio	Completion Ratio-Day Classes	Difference Between Completion Ratios	Z value**
C-1	195	65.97	70.10	-4.13	5.65***
C-2	160	71.10	70.10	+1.00	.02
C-3	151	71.35	70.10	+1.25	.94
C-4	65	71.34	70.10	+1.24	.21
C-0*	89	65.82	70.10	-4.25	not computed

*C-0 = There were 89 questionnaires in which question C was not answered.

**Significance at the 95% confidence level requires a Z value of 1.96 or larger.

***These results are significant beyond the 99% confidence level.

9.3.2 Significance of Data: The results of the third survey question indicate that student completion is affected by class size. For 195 classes characterized as small (0-20 students) student completion was significantly lower than in day classes overall. That this result could not be

obtained by chance alone is guaranteed by a Z value of 5.56--well beyond the 99% confidence level. Classes of 20-30 or 30-40 or over 40 students did not have completion ratios which varied from the overall average.

10. Conclusions:

10.1 Student completion is not significantly affected by the type of class or by the time of day the class is scheduled.

10.2 Student completion is not significantly affected by class size for classes with an enrollment greater than 20 students.

10.3 Recent educational research has continually failed to find any strong correlation between class size and student learning or student success. However, the results of this research indicate that student completion is adversely affected by class size for classes characterized as small (1-20 students). That this result could not have been obtained by chance alone is guaranteed by a Z value of 5.56--well beyond the 99% confidence level.

11. Significance:

11.1 The study did not succeed in isolating course scheduling variables which relate to student completion.

11.2 For many faculty members at Southwestern, the results of this study is at variance with their felt intuitions regarding class size and class time. The report has become an administrative resource to help justify 7:00 a.m. and 3:00 p.m. class offerings and increases in class size.

11.3 Due to the apparent conflict which exists between recent educational research and this study, the significance of the lower completion ratio of small classes is clouded.

12. Further Studies:

12.1 Due to the apparent conflict which exists between recent educational research and this study, a further study should be made to establish reasons for the finding that small classes have a lower completion ratio.

12.2 One area of investigation could be that small classes require greater participation from the student causing the student to withdraw rather than participate.

12.3 A second area of investigation could be that small classes have some other characteristics in common -- (e.g., advanced subject matter) and it is a combination of these factors which cause this lower completion rate.

APPENDIX A

INSTRUCTIONAL VARIABLES AND STUDENT COMPLETION

This research project seeks to determine what relationship exists between three course scheduling variables and student course completions. Please complete this questionnaire by writing in the circle on the right the number which best anwsers each question.

Class _____

Beginning Enrollment: _____

Students Completing: _____

A. What time was the class offered:
   1. 8, 9, or 10 (morning)
   2. 11 AM or 12 PM (mid-morning)
   3. 1 PM, 2 PM, 3 PM, 4 PM (afternoon)
   4. 6:30 PM or Saturday (extension)

B. This class could be characterized as:
   1. Introductory.
   2. Advanced.
   3. For subject majors.
   4. Class was (or should be) Adult Ungraded.

C. This class had approximately:
   1. 0-20 students.
   2. 21-30 students.
   3. 30-40 students.
   4. 40+ students.

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AUG 23 1974

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